

Corrección 1er Control - 1ª Evaluación U.S.S. Matemáticas 17-10-2017

1) $\frac{5}{2\sqrt[4]{5^3} \sqrt[4]{5}} = \frac{5\sqrt[4]{5}}{10} = \frac{\sqrt[4]{5}}{2}$ $\frac{5}{2\sqrt[4]{5}+1} \cdot \frac{2\sqrt[4]{5}-1}{2\sqrt[4]{5}-1} = \frac{5(2\sqrt[4]{5}-1)}{20-1} = \frac{10\sqrt[4]{5}-5}{19}$

2) a) $\log_2 X = -3 \rightarrow X = 2^{-3} \rightarrow X = \frac{1}{8}$

b) $\log_x 125 = 3 \rightarrow X^3 = 125 \rightarrow X = \sqrt[3]{125} \rightarrow X = 5$

3) a) $\frac{\sqrt[4]{27} \cdot \sqrt[3]{3}}{\sqrt{3}} = \frac{\sqrt[12]{3^9 \cdot 3^4}}{\sqrt{3^6}} = \sqrt[12]{3^7} = \sqrt[12]{3^7}$ b) $2\sqrt{3} - 9\sqrt{3} - 5\sqrt{3} + 10\sqrt{3} = -2\sqrt{3}$

4) $\frac{3X^4 - 2X^3 + 8X + 1}{-3X^4 + 3X^2} \div \frac{X^2 - 1}{3X^2 + 1}$ Resultado: $\frac{3X^2 + 1 + 8X + 2}{X^2 - 1}$

5) a) $X^3 - 7X + 6 = (X-1)(X-2)(X+3)$

b) $4X^3 - 13X^2 + 8X + 3 = X^2(X-1)(X+2)$

c) $X^3 - X^2 - X - 2 = (X-2)(X^2 + X + 1)$

$$\begin{array}{r|rrrr} 2 & 1 & -1 & -1 & -2 \\ & & 2 & 2 & 2 \\ \hline & 1 & 1 & 1 & 0 \end{array}$$
 sin solución

$$\begin{array}{r|rrrrrr} 1 & 1 & 0 & -7 & 6 \\ & & 1 & 1 & -6 \\ \hline 2 & 1 & 1 & -6 & 0 \\ & & 2 & 6 & \\ \hline & 1 & 3 & 0 & \\ & & 4 & 13 & -3 & -2 \\ & & 4 & 4 & -9 & -1 & 2 \\ & & 4 & 4 & -9 & -1 & 2 & 0 \\ & & 4 & 8 & -1 & -2 \\ & & 4 & 8 & -1 & -2 & 0 \\ & & -2 & -8 & 0 & 2 \\ & & & 4 & 0 & -1 & 0 \end{array}$$

6) a) $4X^3 - 8X^2 + X + 3 = 0$ $X = 1$

$X = \frac{4 \pm \sqrt{16 + 48}}{8} = \frac{4 \pm 8}{8}$ $X = \frac{3}{2}$ $X = -\frac{1}{2}$

b) $\frac{3}{X} - \frac{X}{X+2} = \frac{5X-1}{(X+2)(X-1)}$

$3(X+2)(X-1) - X^2(X-1) = X(5X-1)$

$3X^2 + 3X - 6 - X^3 + X^2 = 5X^2 - X \rightarrow X^3 + X^2 - 4X + 6 = 0$

$$\begin{array}{r|rrrr} -3 & 1 & 1 & -4 & 6 \\ & & -3 & 6 & -6 \\ \hline & 1 & -2 & 2 & 0 \end{array}$$
 $X = -3$

c) $\sqrt{2X^2 + 2X - 3} = (-X-1)^2$

$2X^2 + 2X - 3 = X^2 + 2X + 1 \rightarrow X^2 - 4 = 0 \rightarrow X = \pm 2 \rightarrow X = -2$

d) $X^2 = \frac{17 \pm \sqrt{17^2 - 4 \cdot 16}}{2} = \frac{17 \pm 15}{2} \rightarrow X^2 = 16 \rightarrow X = \pm 4$